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EXAMINER	
ABDI, AMARA	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/723,736	Applicant(s) AVINASH, GOPAL B.	
	Examiner Amara Abdi	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8-10, 22, 25* is/are allowed.

6)☒ Claim(s) *1-3,5-7,11-13,15-21,23,24 and 26* is/are rejected.

7)☒ Claim(s) *4 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11/26/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant’s response to the last office action, filed November 14, 2008 has been entered and made of record.

2. Applicant's arguments with respect to claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1, 6, 21, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Wilensky et al. (US 7,171,057).

(1) Regarding claims 1, 21, and 24:

Wilensky et al. teach a method for processing image data comprising:

processing input image data (col. 4, lines 1-2) by identifying features of interest (image region) to produce processed image data (col. 4, lines 7-15, and lines 48-49);

characterizing spike noise in the input image data (estimating noise in the image) (col. 4, lines 35-41); and

performing spike noise dependent blending of data derived from the input image data with the processed image data based upon the characterization (col. 6, lines 38-44).

(2) Regarding claim 6:

Wilensky et al., teach an image blending using non-affine interpolation, where using the formulas (5): blend = (1-β) I1s+ β I2s (column 7, line 49), with a first weighting factor β varying between (0) to (1) (column 8, line 5), and (I1s and I2s means a non-noise components) on discrete picture elements (paragraph [0001], line 2) (the discrete picture element is read as a pixel) determined not to exhibit spike noise (the exhibit is read as display or show), (if β= 1, Blend= I1s+I2s, witch means a non-noise components (not to exhibit the spike noise). Wilensky et al. is using also the formula (6): blend= √ (1- β) * I1n+√ β * I2n) (column 7, line 50), with the second weighting factor √ β varying between (0) to (1) (column 8, line 5), and (I1n and I2n means a -noise components) on discrete picture elements (paragraph [0001], line 2), (the discrete picture element is read as a pixel) determined to exhibit spike noise (the exhibit is read as display or show), (if β= 0, Blend = I1n + I2n witch means there is a noise component (to exhibit the spike noise).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilensky et al. (US 7,171,057) in view of Avinash (US 6,208,763).

(1) Regarding claim 2:

Wilensky et al. teach the parental claim 1. However, Wilensky et al. do not teach explicitly the rank-order filtering of the input image.

Avinash, in analogous environment, teach a method and apparatus for enhancing discrete pixel images, where using binary rank order filter for filtering the input image (100 in Fig. 4, col. 8, lines 18-20).

It is desirable to expand and defining the appropriate width of contiguous features used to define structural elements. The Avinash's approach, where using the binary rank order filter is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Avinash teaching, where using binary rank order filter for filtering the input image, with Wilensky et al., because such combination provides satisfactory results in expanding and defining the appropriate width of contiguous features used to define structural elements (col. 8, lines 22-25).

(2) Regarding claim 5:

The combination Wilensky et al and Avinash teaches the parental claim 2; Furthermore, Avinash teaches the system, where the filtered image is blended with the processed image data (Avinash: col. 5, lines 11-29).

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilensky et al. and Avinash, as applied to claim 2 above, and further in view of Metcalfe et al. (US 6,094,511).

The combination Wilensky et al. and Avinash teach the parental claim 2. However, the combination Wilensky et al. and Avinash do not teach explicitly the computing of the absolute difference between the rank-order filtered input image and the input image.

Metcalfe et al., in analogous environment, teach an image filtering method and apparatus, where computing of the absolute difference between sharpen filtered input image (rank-order filtered input image) and the input image (Fig. 6, step 62, col. 9, lines 50-52) (the computing of the absolute difference between sharpen filtered input image and the input image is read as the same concept as the computing of the absolute difference between the rank-order filtered input image and the input image)

It is desirable to reduce or eliminate noise in the output signal. The Metcalfe's approach, where computing of the absolute difference between sharpen filtered input image and the input image is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the

Metcalfe et al. teaching, where computing of the absolute difference between sharpen filtered input image and the input image, with the combination Wilensky et al. and Avinash, because such feature provides an image filtering technique in which an image signal and one or more filtered signal are combined in a predefined manner to reduce or eliminate noise in the output signal (col. 1, lines 48-52).

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wilensky et al. (US 7,171,057) in view of Janko et al. (US 6,690,840).

Wilensky et al. teach the parental claim 2. However, Wilensky et al. do not teach explicitly the shrinking of the input image by a desired factor and interpolating the resulting image to the size of the input image.

Janko et al., in analogous environment, teaches an image alignment with global translation and linear stretch, where shrinking (linear stretch) of the input image by a desired factor (col. 2, lines 59-60) and interpolating the resulting image to the size of the input image (col. 3, lines 6-10), (the inverse stretch is read as the same concept as the interpolating the resulting image to the size of the input image).

It is desirable to compensate for both the global translation and linear stretch. The Janko's approach, where shrinking the input image by a desired factor is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Janko et al. teaching, where shrinking the input image by a desired factor, with the Wilensky et al. teaching, because such combination

will have an image alignment method that compensates for both the global translation and linear stretch (column 1, line 35-36).

9. Claims 11, 18-20, 23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasahara et al. (US-PGPUB 2002/0005857) in view of Cooper (US 7,215,365).

<u>(1) Regarding claims 11, 23, and 26:</u>

Kasahara et al. teach the method for processing image data comprising:

processing input image data by identifying features of interest (pixels of interest) (Fig. 3) to produce processed image data (paragraph [0171], lines 1-8);

determining a likelihood that discrete picture elements in the input image data exhibit spike noise (paragraph [0024], lines 11-13); and

blending data derived from the input image data with the processed image data determined (paragraph [0188], lines 6-9) based upon the likelihood that the discrete picture elements exhibit spike noise (paragraph [0024], lines 11-13).

However, Kasahara et al. do not teach explicitly the weighting factor.

Cooper, in analogous environment, teaches a system and method for effectively calculating destination pixels in an image data processing procedure, where performing a blending procedure to blend the forgoing optimal processed image data (the processed image data) with the raw image data (the input image data) to thereby produce final image data (col. 2, lines 28-31) via a weighting factor (col. 12, lines 21-22).

It is desirable to effectively performing an image data processing procedure. The Cooper's approach, where using the weighting factor is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Cooper teaching, where using the weighting factor, with the Kasahara et al. teaching, because such combination provides an improved system and method for effectively performing an image data processing procedure (col. 2, lines 31-33).

(2) Regarding claim 18:

Kasahara et al. teach the system for processing image data comprising:

processing input image data to generate processed image data (paragraph [0171], lines 1-8);

determining a likelihood that discrete picture elements in the input image data exhibit spike noise (paragraph [0024], lines 11-13); and to blend data derived from the input image data with the processed image data determined (paragraph [0188], lines 6-9) based upon the likelihood that the discrete picture elements exhibit spike noise (paragraph [0024], lines 11-13).

However, Kasahara et al. do not teach explicitly the memory circuit for storing input image data and the weighting factor.

Cooper, in analogous environment, teaches a system and method for effectively calculating destination pixels in an image data processing procedure, where using the memory circuit for storing input image data memory (46 in Fig. 3) (col. 4, line 20), and performing a blending procedure to blend the forgoing optimal processed image data

(the processed image data) with the raw image data (the input image data) to thereby produce final image data (col. 2, lines 28-31) via a weighting factor (col. 12, lines 21-22).

It is desirable to effectively performing an image data processing procedure. The Cooper's approach, where using memory and weighting factor is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Cooper teaching, where using the weighting factor, with the Kasahara et al. teaching, because such combination provides an improved system and method for effectively performing an image data processing procedure (col. 2, lines 31-33).

(3) Regarding claim 19:

The combination Kasahara et al. and Cooper teach the parental claim 18. Furthermore, Kasahara et al. teach the use of personal computer, where the processing step and the blending step is programmed (Kasahara: paragraph [0094], line 6).

(4) Regarding claim 20:

The combination Kasahara et al. and Cooper teaches the parental claim 18. Furthermore, Cooper teaches the system, further comprising an image acquisition system (camera) (110 in Fig. 1) for generating the input image (Cooper: col. 3, lines 22-28).

10. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasahara et al. and Cooper as applied to claim 11 above, and further in view of Avinash (US 6,208,763).

(1) Regarding claim 12:

The combination Kasahara et al. and Cooper teach the parental claim 11. However, the combination Kasahara et al. and Cooper do not teach explicitly the rank-order filtering of the input image.

Avinash, in analogous environment, teach a method and apparatus for enhancing discrete pixel images, where using binary rank order filter for filtering the input image (100 in Fig. 4, col. 8, lines 18-20).

It is desirable to expand and defining the appropriate width of contiguous features used to define structural elements. The Avinash's approach, where using the binary rank order filter is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Avinash teaching, where using binary rank order filter for filtering the input image, with the combination Kasahara et al. and Cooper, because such combination provides satisfactory results in expanding and defining the appropriate width of contiguous features used to define structural elements (col. 8, lines 22-25).

(2) Regarding claim 15:

The combination Kasahara et al., Cooper and Avinash teaches the parental claim 12, Furthermore, Avinash teaches the system, where the filtered image is blended with the processed image data (Avinash: col. 5, lines 11-29)

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kasahara et al., Cooper and Avinash, as applied to claim 12 above, and further in view of Metcalfe et al. (US 6,094,511).

The combination Kasahara et al., Cooper and Avinash teach the parental claim 2. However, the combination Kasahara et al., Cooper and Avinash do not teach explicitly the computing of the absolute difference between the rank-order filtered input image and the input image.

Metcalfe et al., in analogous environment, teach an image filtering method and apparatus, where computing of the absolute difference between sharpen filtered input image (rank-order filtered input image) and the input image (Fig. 6, step 62, col. 9, lines 50-52) (the computing of the absolute difference between sharpen filtered input image and the input image is read as the same concept as the computing of the absolute difference between the rank-order filtered input image and the input image)

It is desirable to reduce or eliminate noise in the output signal. The Metcalfe's approach, where computing of the absolute difference between sharpen filtered input image and the input image is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Metcalfe et al. teaching, where computing of the absolute difference between sharpen filtered input image and the input image, with the combination Kasahara et al., Cooper and Avinash, because such feature provides an image filtering technique in which an image signal and one or more filtered signal are combined in a predefined manner to reduce or eliminate noise in the output signal (col. 1, lines 48-52).

12. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kasahara et al. and Cooper as applied to claim 11 above, and further in view of Wilensky et al. (US 7,171,057).

The combination Kasahara et al. and Cooper teaches the parental claim 11. However, the combination Kasahara et al. and Cooper do not teach explicitly that weighting factor is performed on discrete picture elements determined not to exhibit spike noise, and blending via a least a second weighting factor is performed on discrete picture elements determined to exhibit spike noise.

Wilensky et al., teach an image blending using non-affine interpolation, where using the formulas (5): blend = (1-β) I1s+ β I2s (column 7, line 49), with a first weighting factor β varying between (0) to (1) (column 8, line 5), and (I1s and I2s means a non-noise components) on discrete picture elements (paragraph [0001], line 2) (the discrete picture element is read as a pixel) determined not to exhibit spike noise (the exhibit is read as display or show), (if β= 1, Blend= I1s+I2s, witch means a non-noise components (not to exhibit the spike noise). Wilensky et al. is using also the formula (6): blend= √ (1- β) * I1n+√ β * I2n) (column 7, line 50), with the second weighting factor √ β varying between (0) to (1) (column 8, line 5), and (I1n and I2n means a -noise components) on discrete picture elements (paragraph [0001], line 2), (the discrete picture element is read as a pixel) determined to exhibit spike noise (the exhibit is read as display or show), (if β= 0, Blend = I1n + I2n witch means there is a noise component (to exhibit the spike noise).

It is desirable to reduce the size of any region affected by noise cancellation while still allowing a gradual overall transition. The Wilensky's approach, where using the first and second blending factors to exhibit or not exhibit the noise is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Wilensky et al. teaching, where using the first and second blending factors to exhibit or not exhibit the noise, with the combination Kasahara et al. and Cooper, because such feature reduces the size of any region affected by noise cancellation while still allowing a gradual overall transition (col. 1, lines 4-67).

13. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kasahara et al. and Cooper as applied to claim 11 above, and further in view of Janko et al. (US 6,690,840).

The combination Kasahara et al. and Cooper teaches the parental claim 11. However, the combination Kasahara et al. and Cooper do not teach explicitly the shrinking of the input image by a desired factor and interpolating the resulting image to the size of the input image.

Janko et al., in analogous environment, teaches an image alignment with global translation and linear stretch, where shrinking (linear stretch) of the input image by a desired factor (col. 2, lines 59-60) and interpolating the resulting image to the size of the input image (col. 3, lines 6-10), (the inverse stretch is read as the same concept as the interpolating the resulting image to the size of the input image).

It is desirable to compensate for both the global translation and linear stretch. The Janko's approach, where shrinking the input image by a desired factor is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Janko et al. teaching, where shrinking the input image by a desired factor, with the combination Kasahara et al. and Cooper, because such combination will have an image alignment method that compensates for both the global translation and linear stretch (column 1, line 35-36).

Allowable Subject Matter

14. The following is an examiner's statement of reasons for allowance:

(a) Independent claims 8, 22, and 25 are allowable over the prior art of record.

Claims 9 and 10 depend from claim 8, therefore, are allowable.

Independent claim 8, recite the limitation: "generating a multi-level mask of spike noise likelihood based upon the absolute differences". The combination of this feature as cited in the claim with the other limitations of the claim is neither disclosed nor suggested by the prior art.

The closest reference of US 5,673,332 to Nishikawa et al. disclose a computer aided method for image feature analysis. However this reference either by itself or in combination with other references does not teaches the generating a multi-level mask of spike noise likelihood based upon the absolute differences

(b) Claim 4 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

<u>Contact Information:</u>

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amara Abdi whose telephone number is (571)270-1670. The examiner can normally be reached on Monday through Friday 8:00 Am to 4:00 PM E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jingge Wu/
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/Amara Abdi/
Examiner, Art Unit 2624